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A Study of the Genus *Brachymetra* (Hemiptera—Gerridæ)

J. GILBERT SHAW, Lawrence, Kansas*

ABSTRACT: This paper gives a key for separation of five species and one subspecies. Three species and the subspecies are described as new.

THE family Gerridæ is divided into two subfamilies—the Ger-
rinæ and the Halobatinæ. Among the numerous genera of the
latter belongs the genus *Brachymetra*, a new world genus.

DESCRIPTION OF THE GENUS

All members of the genus *Brachymetra* possess a triangular and convex head. The almost oval eyes extend obliquely laterad of anterior angles of the pronotum. The rostrum extends well beyond anterior coxæ. The antennæ are over one-half the length of the body, all segments round and straight except the basal, which is definitely arched, basal segment longer than the head, second segment shorter than the head, third segment invariably longer than the second segment, and apical segment of about same length as second. Pronotum possesses medially near anterior margin a shallow horseshoe-shaped impression; single faint carination runs obliquely and posteriorly of each humeral angle. Lateral margins of mesothorax strongly divergent in both sexes. The prothoracic legs are shorter than the body and have rather stout femora, which bear a few stout hairs beneath, while the meso- and metathoracic legs are very long and slender with the frail femora alone about as long and longer, respectively, than the body. The elytra exceed the abdomen.

* Contribution from the Department of Entomology, University of Kansas.

Abdomen moderately short, sixth segment unarmed, apical margin on ventral side of male emarginate, while that of female is almost straight. Claspers inserted on each side of genital capsule of male. Body covered by a dull pubescence. All the species possess on meso- and metathoracic acetabula a heavier pubescence, which is generally silvery.

KEY TO THE SPECIES OF BRACHYMETRA

- A. Species with first antennal segment as long or longer than the two following; pronotum striped with black.
 - B. Pronotum with median line black.....*unca* sp. n.
 - BB. Pronotum median line not black but bordered by a pair of black bands.
.....*vittata* sp. n.
- AA. Species with first antennal segment shorter than the two following; pronotum, except margin, more or less unicolorous.
 - B. Apex of pronotum acutely angulate, extending well beyond tip of mesothoracic acetabula*kleopatras* Kirk.
 - BB. Apex of pronotum rather bluntly angulate, not extending beyond tip of mesothoracic acetabula.
 - C. Anterior femur only slightly larger than intermediate femur; rear margin of eye definitely greater than interocular space.....*lata* sp. n.
 - CC. Anterior femur at least one and one-half times larger than intermediate femur; rear margin of eye equal to or less than interocular space.
 - D. First antennal segment plainly surpassing rear lateral margin of eye when turned back; first abdominal tergite shallowly incised behind*albinerva* (A. & S.).
 - DD. First antennal segment just about attaining rear lateral margin of eye when turned back; first abdominal tergite deeply incised behind*albinerva incisa* sub-sp. n.

Brachymetra unca sp. n.

(Pl. 1, figs. 2, 2a, 2b, 2c)

APTEROUS FORM

Size. Length of males 6.5 mm., females 6.1 mm.; width of males 2.5 mm., females 2.8 mm. at widest place.

Color. Chocolate brown above, venter yellowish brown, dull pubescence with a varnished background. A median dark line extending throughout the length of the pronotum, metanotum and the first abdominal segment. Margins of pronotum and connexiva dark. Caudal margin of last abdominal segment of male dark, with the genital segments somewhat dark; caudal margin of last abdominal segment and genital segments of female dark. Meso- and metathoracic acetabula dark above. Tip of rostrum, eyes, antennæ, and legs dark, except the anterior coxæ, trochanter and basal half of the femora, which are about same shade as venter.

Structural Characteristics. Antennal formula of male: 1st : 2d : 3d : 4th :: 30 : 11 : 18* : 15; female : 26 : 10 : 16.5 : 14. Eyes rather

* Includes tiny basal ring segment.

small in comparison to size of body, less than one-half the length extending caudad of the posterior angle of the head. Interocular space about four-fifths the length of eye. Sides of prothorax almost parallel with the sides of mesothorax inflated. Length of pronotum on median line is to length of metanotum exposed as 6.8 : 1 (both sexes). Anterior femur as long as the pronotum on its median dorsal line; in the male this femur is fully twice as large as intermediate femur and distinctly arched, while in the female it is about one and one-half times as large as intermediate femur and quite straight; tibia slightly shorter than femur, somewhat curved on distal third, its tip slightly, if any, produced beyond base of tarsus; first tarsal segment one-half as long as the second. Intermediate femur a trifle shorter than body; tibia about one-seventh longer than the femur and over four times as long as tarsus; first tarsal segment three times as long as the second. Posterior femur about one-fifth longer than intermediate femur and almost twice as long as tibia; tibia almost four times as long as its tarsus; first tarsal segment over one and one-half times as long as the second. In the female the last abdominal segment surpasses the apex of posterior trochanter. In the male the genital segments are one-half to three-fifths the length of the abdomen, the abdomen surpassing the posterior trochanter by about one-third the length of the last segment; the last ventral abdominal segment as long as the two preceding combined in the male and as long or longer than the three preceding combined in the female. In the male the claspers are so long and curved that they overlap slightly on the dorsal side of the second genital.

Described from a series of twenty specimens labeled, "Trinidad, B. W. I., Port of Spain, Nov. 5, 1931, W. E. Broadway," and the same data "near St. Patrick Oct. 25, 1931." Holotype, allotype and paratypes in the Francis Huntington Snow Entomological Museum, University of Kansas, Lawrence, Kansas.

MACROPTEROUS FORM

Size. Length to tip of elytra, 7.3 mm.; width, 2.5 mm.

Color. Same color as in apterous form. A median dark line on pronotum, extending from anterior margin to beyond the middle. Elytra, including veins, black with apices somewhat fuscous.

Structural Characteristics. Lateral margins of pronotum back of humeral angles more depressed than in related species, depressed area at apex about equals the head in length. Anterior femur one-

fifth shorter than pronotum. Elytra exceed abdomen by over half the length of the head.

Described from a single male specimen labeled, "Trinidad, B. W. I., Port of Spain, Nov. 5, 1931, W. E. Broadway." Holomorphotype deposited in the Francis Huntington Snow Entomological Museum, University of Kansas, Lawrence, Kansas.

Brachymetra vittata sp. n.

(Pl. 1, figs. 3, 3a)

MACROPTEROUS FORM

Size. Length of male, 9.3 mm., female, 9 mm.; width of male, 3.3 mm., female, 3.3 mm.

Color. A striped species; clay-yellow with head almost reddish-brown, venter yellowish. Heavy black band bordering lateral margins of pronotum and continuing slightly inside the margin from the humeral angles to the apex, a pair of heavy black bands extending from anterior end two-thirds the way along the median line. Margins of connexiva dark. Anterior acetabulum with black spot on dorsal side, a black spot on lateral side of prothorax dorsad and caudad of this. An oblique black band running slightly ventrad along lateral side of mesothorax, with slight break which is followed by a broader band on the mesothoracic acetabulum. A solid band also originates posterior to the mesothoracic spiracle and continues unbroken to apex of metathoracic acetabulum. Two black spots are just below the spiracles of each abdominal segment of female. A black spot on vertex next to each eye continuous with median bands of pronotum, a third spot on median line about half way between these and rostrum. Eyes, antennae and tip of rostrum, dark. Anterior femur with apex and ventral side dark, tibia and tarsus also dark. Meso- and metathoracic legs somewhat dark with apex of mesothoracic femur black preceded preapically by light brown. Elytra including veins black; caudal half of costal margin light brown.

Structural Characteristics. Antennal formula of female: 1st : 2d : 3d : 4th :: 44 : 18 : 23 : 20 (no antennae on male specimen). Eyes quite small in comparison to size of body, less than one-half the length extending caudad of the posterior angle of the head. Interocular space three-fourths the length of the eye. Apex of pronotum blunter than in other species, margin narrowly depressed. Anterior femur not as stout as in *B. unca* but arched apically (no prothoracic or right meso- and metathoracic legs present on the male), equal in length to the pronotum on its median line; tibia almost as long

as femur and somewhat curved apically, its tip produced slightly beyond base of tarsus; first tarsal segment one-half to three-fifths as long as the second. Intermediate femur a trifle longer than body in female, and about one-fourth longer in the male; tibia slightly shorter than the femur and almost three times as long as tarsus; first tarsal segment about three times as long as second. Posterior femur barely longer than intermediate femur and two-thirds longer than the tibia; tibia over four times as long as tarsus; first tarsal segment about one-fourth longer than second. In the female the last two abdominal segments exceed tip of posterior trochanter. In the male the genital segments only one-half longer than the posterior abdominal segment, the abdomen surpassing the posterior trochanter by about the length of the last segment. The last ventral abdominal segment about one and one-fourth times as long as preceding one in the male and over one and one-half times as long as preceding one in the female. In the male the claspers do not exceed the posterior margin of the first genital and are scarcely visible between the first and second genital. Elytra exceed abdomen by over one-half the length of head.

Described from single male and female specimens labeled, "Marianie Port au Prince, Haiti, July 10, 1930, R. M. Bond." Holotype and allotype in the Francis Huntington Snow Entomological Museum, University of Kansas, Lawrence, Kansas.

APTEROUS FORM

Size. Length of females, 8.4 mm.; width, 3.3 mm.

Color. Color markings mostly as in the macropterous forms. Median bands on pronotum almost continuous to base. Wide, black band originating laterad of median bands of pronotum and extending posteriorly, bifurcating preapically at the base of the pronotum, one branch continuous with the black margin of connexivum and the other running around apex of pronotum and meeting band from other side at the median line of the tergum of the metathorax. Terga of abdominal segments mostly black.

Structural Characteristics. Same as in the macropterous forms with the exception that the apex of the pronotum is less blunt, exposing only the posterior margin of the mesothorax; lateral margins more parallel and lacking the rather acute humeral angles.

Described from four female specimens labeled, "Marianie Port au Prince, Haiti, July 10, 1930, R. M. Bond." Holomorphotype and paramorphotypes in the Francis Huntington Snow Entomological Museum, University of Kansas, Lawrence, Kansas.

Brachymetra kleopatra Kirk.

(Pl. 1, fig. 5)

Brachymetra kleopatra Kirkaldy. Bolletino dei Musei di Zoölogia Anatomia Comparata, Torino, vol. XIV, No. 350, 1899, p. 3.

Kirkaldy's original description of this species fits the single female I have on hand with the following exceptions: (1) The specimen which I have before me measures 8.2 mm. long and 3 mm. wide, while he gives measurements of $9\frac{3}{4}$ mm. long and 2.5 mm. wide. (2) "Head and pronotum very smooth and polished." I find both to be quite pubescent except for smooth spot on vertex between the eyes (apparently having been rubbed smooth).

The specimen at hand is lacking antennal segments and anterior legs. I will quote Mr. Kirkaldy's descriptions of these parts.

Color. Reddish-brown above, venter tan. Tip of meso- and metathoracic acetabula dark. Two darkened spots just below spiracle of each abdominal segment. Eyes dull wine, rostrum tip dark, and the legs dark brown. Elytra velvety brown with veins grayish brown.

Structural Characteristics. "First segment of the antennæ shorter than the second and third together, first segment rather more than twice as long as the second, second and fourth subequal, third one-third longer than the second." Eyes rather small in comparison to size of body, about one-half the length extending caudad of the posterior angle of the head. Interocular space about four-fifths the length of eye. The apex of pronotum most widely depressed and most acutely produced of all the species of the genus, being produced well beyond the apices of metathoracic acetabula. "Anterior tibia one-fourth longer than the femur, three and a quarter times longer than tarsus, second segment of the latter two-thirds longer than the first." Intermediate femur about one-tenth shorter than body; tibia slightly longer than femur and three times as long as tarsus; first tarsal segment about five times as long as second. Posterior femur equals the length of the body and one-tenth longer than intermediate femur and almost twice the length of the tibia; tibia three times as long as tarsus; first tarsal segment over twice the second. The last two abdominal segments exceed the posterior trochanter. Last ventral abdominal segment almost as long as two preceding. Elytra exceed abdomen by one-half the length of head. The single female specimen on hand is labeled, "British Guiana, S. A., near New Amsterdam, July 30, 1923, F. X. Williams."

Brachymetra lata sp. n.

(Pl. XX, figs. 4, 4a, 4b)

APTEROUS FORM

Size. Length of males, 7 mm., females, 7 mm.; width of males, 2.5 mm., and females, 2.7 mm.

Color. Reddish-brown above, venter a lighter shade of brown. Margins of pronotum dark, median line light. Margins of connexiva dark. Genital segments mostly dark, caudal half of the last abdominal tergum of male dark. Tip of metathoracic acetabula dark while that of the mesothorax is light with a brown spot borne preapically. Eyes brown mottled with dark spots, tip of rostrum, antennae and legs dark, except anterior coxae, trochanters and basal half of anterior side of femora.

Structural Characteristics. Antennal formula of male: 1st : 2d : 3d : 4th :: 29 : 15 : 22.5 : 16; female: 27 : 14 : 20 : 15. Eye about one and one-half times longer than wide, larger in comparison to size of body, over one-half the length, with its rear margin slightly greater than interocular space, extending caudad of the posterior angle of the head. Interocular space about three-fifths the length of eye. Head, including eyes, considerably wider than prothorax. Pronotum with apex bluntly produced, length on median line is to length of metanotum exposed as 5.6 : 1 (both sexes). Anterior femur not much stouter than intermediate femur, but somewhat arched apically, slightly longer, if any, than pronotum on its median line. Tibia shorter than femur and barely curved on its distal end, its tip produced slightly beyond base of tarsus; first tarsal segment about two-thirds as long as second. Intermediate femur about equal in length to body of male, but almost one-tenth shorter in the female; tibia equal to length of femur in male, but slightly longer in female, and five and one-half to six times as long as tarsus; first tarsal segment three times as long as second in male and three and one-half times as long in female. Posterior femur one-seventh longer than intermediate femur and over twice the length of its tibia; tibia four and one-half times longer than its tarsus; first tarsal segment about one-third longer than the second. In the female the last two abdominal segments exceed tip of posterior trochanter. In the male the genital segments are about one-fourth the length of the abdomen, the abdomen surpassing the posterior trochanter by the last segment. Last ventral abdominal segment about four-fifths as long as the two preceding combined in the male and as

long in the female. A pair of rather straight claspers barely exceed, if any, posterior margin of first genital.

Described from a series of 160 labeled, "Manacapuru, S. A., Amazonas, Brazil, Solimoes river, 6. 26, S. M. Klages." Holotype, allotype and paratypes in the Francis Huntington Snow Entomological Museum, University of Kansas, Lawrence, Kansas.

MACROPTEROUS FORM

Size. Length of males to tip of elytra, 7.4 mm., females, 7.4 mm.; width of males, 2.5 mm. and females, 2.7 mm.

Color. Same color as in apterous forms. Margin of pronotum indistinctly darkened. Elytra a rich velvety brown, paler at apices, veins a rich yellow.

Structural Characteristics. Pronotum with apex about as blunt as in apterous forms. Anterior femur slightly shorter than pronotum on its median line. Elytra exceed abdomen by about half the length of head or less.

Described from a series of 114 with same data as for apterous forms. Holomorphotype, allomorphotype and paramorphotypes in the Francis Huntington Snow Entomological Museum, University of Kansas, Lawrence, Kansas.

Brachymetra albinerva (A. & S.)

(Pl. XX, figs. 1, 1a, 1b, 1c.)

Brachymetra albinerva (Amyot et Serville). Hist. Nat. Ins. Hem., 1843, p. 412.

APTEROUS FORM

Size. Length of males, 5.4-6.8 mm., females, 5.5-6.9 mm.; width of males, 2.3-2.7 mm., and females, 2.5-3.1 mm.

Color. Dull chocolate brown above, venter lighter. Margins of pronotum and connexiva dark. Genital segments dark. Mesothoracic and metathoracic acetabula darkened above. Eyes and tip of rostrum dark. Antennæ and legs same shade as the body or a little darker except the anterior femora, which are lighter on the dorsal basal two-thirds.

Structural Characteristics. Antennal formula of male: 1st : 2d : 3d : 4th :: 21 : 11 : 15 : 12; female: 20 : 11 : 15 : 11.5; in the larger specimens it measures as follows, male: 25 : 14 : 18 : 14; female: 23 : 14 : 16 : 15. Eye with its rear margin about equal to interocular space, one-half the length of eye extending caudad of the posterior angle of the head. Interocular space two-thirds the length of eye. Head, including eyes, only slightly wider than prothorax. Length

of pronotum on median line is to length of metanotum exposed as 6.5 : 1 (both sexes). Anterior femur arched and at least one and one-half times larger than intermediate femur, about one-fifth shorter than pronotum on its median line; tibia slightly shorter than femur, curved on distal third, its tip barely produced beyond base of tarsus; first tarsal joint three-fourths as long as second. Intermediate femur one-ninth shorter than body; tibia about one-tenth longer than femur and over three and one-half times as long as tarsus; first tarsal segment slightly more than three times as long as the second. Posterior femur about one-tenth longer than intermediate femur and about twice as long as its tibia. Tibia over three times as long as its tarsus. First tarsal segment about one and one-half times as long as the second. In the female the last two abdominal segments exceed the posterior trochanter. In the male the genital capsule usually only slightly longer than the posterior abdominal segment, while in specimens with it greatly protruding it may be one-third the length of abdomen, the abdomen surpassing the posterior trochanter by about the length of the last segment. The last ventral abdominal segment one and one-half times as long as preceding in the male and twice as long as preceding in the female. In the male the claspers extend beyond first genital and are strongly curved upward and laterad of second genital.

Specimens are at hand from the following localities: Banos, Mera, Tena, and Huigra, Ecuador, and Sao Paulo, Brazil, South America; Trinidad, B. W. I.; and Fort Clayton and Barro Colo Island, Canal Zone.

MACROPTEROUS FORM

Size. Length of males, 6 mm., females, 6.1 mm.; width of males, 2.3 mm., and females, 2.4 mm.

Color. Same color as in apterous forms. Elytra of the same shade of brown as the body or darker, veins yellowish.

Structural Characteristics. Anterior femur definitely shorter than pronotum on its median line. Elytra exceed abdomen by at least one-half the length of head.

Specimens on hand from the following localities: Mera and Huigra, Ecuador, South America: and Fort Clayton and Barro Colo Island, Canal Zone.

Brachymetra albinerva incisa subsp. n.

APTEROUS FORM

Size. Length of males, 5.4 mm., females, 5.6 mm.; width of males, 2.4 mm., and females, 2.5 mm.

Color. A subspecies which is yellowish brown above, venter paler, almost yellowish. Lateral margins of pronotum and connexiva distinctly darkened by a narrow band, as well as the posterior margins of abdominal terga. Meso- and metathoracic acetabula darkened on apical margins. Eyes and tip of rostrum dark. Antennæ and legs about same shade as the body or a little darker, except the anterior femora, which are lighter on the dorsal basal two-thirds, apices of femora and tibia darkened.

Structural Characteristics. Structurally the same as *B. albinerva*, but the following morphological characteristics, along with the color, have made me feel justified in calling this series a subspecies. Antennal formula of male: 1st : 2d : 3d : 4th :: 18.5 : 10.5 : 14.5 : 11.5; female: 18 : 19 : 14 : 11. When the first antennal segment of *B. albinerva incisa* is turned back it about attains rear lateral margin of eye, while in *B. albinerva* it plainly surpasses rear lateral margin of eye. The first abdominal tergite of *B. albinerva incisa* is deeply incised behind, while in *B. albinerva* it is shallowly incised.

MACROPTEROUS FORM

Size. Length of males, 6 mm., females, 6.4 mm.; width of males, 2.3 mm., and females, 2.5 mm.

Color. Same color as in apterous forms. Elytra of the same shade of brown as the body or darker, veins yellowish.

Structural Characteristics. Anterior femur about one-fourth shorter than pronotum on its median line. Elytra exceed abdomen by at least one-half the length of head.

Both forms described from a series of 37 specimens labeled, "Santa Cruz, Bolivia, S. A., J. Steinbach." Holotype, holomorphotype allotype, allomorphotype, paratypes, and paramorphotypes in the Francis Huntington Snow Entomological Museum, University of Kansas, Lawrence, Kansas.

PLATE XX

FIGS. 1, 1a, 1b, 1c. *Brachymetra albinerva* (A. & S.).

Fig. 1. Head and pronotum of macropterous form.

Fig. 1a. Apical end of abdomen showing genital segments and claspers, ventral view.

Fig. 1b. Lateral view of fig. 1a.

Fig. 1c. Clasper.

FIGS. 2, 2a, 2b, 2c. *Brachymetra unca* sp. n.

Fig. 2. Head and pronotum of macropterous form.

Fig. 2a. Apical end of abdomen showing genital segments and claspers, ventral view.

Fig. 2b. Lateral view of fig. 2a.

Fig. 2c. Clasper.

FIGS. 3, 3a. *Brachymetra vittata* sp. n.

Fig. 3. Head and pronotum of macropterous form.

Fig. 3a. Apical end of abdomen showing genital segments and claspers, ventral view.

FIGS. 4, 4a, 4b. *Brachymetra lata* sp. n.

Fig. 4. Head and pronotum of macropterous form.

Fig. 4a. Apical end of abdomen showing genital segments and claspers, ventral view.

Fig. 4b. Clasper.

FIG. 5. *Brachymetra kleopatra* Kirk. Head and pronotum of macropterous form.

PLATE XX

